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SUBJECT: Review of the States of Sinaloa and Chihuahua for Consideration of Hog Cholera (HC) - Low Risk Status and Background Information for the Future Review of Exotic Newcastle Disease (END) Status in Chihuahua

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The enclosed report corresponds to site visits conducted during February 1997 in Sinaloa and Chihuahua and the team's observations concerning the program for HC. The site visit team is specific in the report.

In these states, Mexican officials have effectively controlled HC. The request for low-risk status for HC is viewed favorably, as the risk of these diseases to the United States is apparently low. In making a determination of final risk, the United States should conduct risk assessment procedures using the information that has been gathered.

The team also made some initial observations with regards to END in the State of Chihuahua.

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Enclosures



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Review of the States of Sinaloa and Chihuahua for Consideration of Hog Cholera (HC) - Low Risk Status and Background Information for the Future Review of Exotic Newcastle Disease (END) Status in Chihuahua

Introduction

Site visits were conducted to fulfill APHIS' commitment for recognizing regions of low disease prevalence in areas otherwise affected by HC and to verify the free status of the States of Sinaloa and Chihuahua, Mexico. These visits were conducted during February 1997 and included evaluation of the veterinary infrastructure of these States, observation and discussions regarding the disease control programs in place, and evaluation of the diagnostic capabilities and surveillance programs. The evaluation for Chihuahua is in follow-up to previous visits in April 1995, for the purpose of evaluating the feasibility of allowing fresh and/or frozen pork to transit the United States. A section of this report also addresses the poultry industry in Chihuahua and pertinent observations for future review of the exotic Newcastle disease program in that State. Although Mexico has not made a formal request for this evaluation, they have expressed interest in the market possibilities and APHIS expects to receive a request in the near future. The team took advantage of the opportunity of already being in the State to gather preliminary information for this assessment.

The Department of Agriculture review team consisted of: Dr. Bob Bokma, Associate Director, Operational Support, International Services; Riverdale, Maryland; Dr. Cindy Gaborick, Veterinary Epidemiology Officer, Western Region, Veterinary Services, Englewood, Colorado, and Dr. Karen Shank Sliter, International Trade Specialist, International Services, Mexico City, Mexico. Dr. Elaine Jetté, International Trade Staff Veterinarian, and Dr. Sylvie Farez, Animal and Plant Health Risk Assessment Network, Agriculture and Agri-Food Canada, accompanied the team in Sinaloa and Chihuahua, respectively.

Dr. Michael David, Senior Staff Veterinarian, National Center of Import and Export, and Dr. Alejandro Perera, Animal Health Specialist, International Services, Mexico City, Mexico, participated during the Sinaloa visits. These reviewers were present in Sinaloa to specifically address the END status in that State and in Sonora.

Abbreviations for and explanation of Mexican governmental organizations are given in Appendix 1. The itinerary presented in this report addresses both swine and poultry and is included here as Appendix 2. The team was accompanied in Sinaloa and Chihuahua by

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governmental officials and representatives of the swine and poultry industries, as indicated in Appendices 3 and 4.

Site Visit Objectives

The site visits were made to clarify various items that were not evident from the material Mexico had presented to APHIS/VS in June 1994 and in August 1995. Specifically, clarification and/or additional information were requested for the items listed in Appendices 5 and 6 for Sinaloa and Chihuahua, respectively. Responses by Mexico to these questions are given in the documentation cited below. In general, the information requested was related to the following:

1. Veterinary infrastructure--federal authority and relationships/links with State and local animal health officials.
2. Compliance, enforcement, and movement controls.
3. Survey data and surveillance methods and associated laboratory support.

The team met with and/or visited the following sites from February 19-21 in Sinaloa:

1. Several meetings in Mazatlan and Culiacán, Sinaloa, with SAGAR Federal delegate, sub-delegate, and others, CPA, State officials, "Comite de Fomento y Proteccion Pecuaría" (CFPP), and swine and poultry industry representatives.
2. Visit the movement control/inspection stations of "La Concha" and "Concordia" to review interstate movement controls, between Sinaloa and the states of Nayarit and Durango, respectively.
3. Visit to view backyard poultry and swine in the municipality of Escuinapa.
4. Visit to a commercial swine production facility, "Carnes Santa Cecilia" and to a commercial poultry enterprise, "Bachoco," near Culiacán.
5. Review sampling and surveillance methodology and data at the Federal SAGAR offices in Culiacán.
6. Visits to municipal slaughter plant in Culiacán for hogs and ruminants and a Federally inspected (TIF) poultry processing plant near Culiacán.
7. Interview with the Governor of Sinaloa, Ing. Renato Vega-Alvarado.

The team met with and/or visited the following sites from February 22 -25 in Chihuahua:

1. Several meetings in Chihuahua City, with SAGAR Federal delegate, subdelegate, and others, CPA, State officials, and swine and poultry industry representatives.
2. Visit to TIF processing plant "Carnes Selecta Baeza Farez" in Chihuahua City.
3. Visit to swine farm at CEBETA agricultural high school swine herd.
4. Visits to backyard swine and poultry in Santa Eulalia, and Mennonite community family farm, Cuauhtemoc City.

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5. Visits to commercial turkey farm and slaughterhouse, both belonging to the Parson company, Nuevo Casas Grandes, Chihuahua.
6. Visit to "El Fresno" movement control/inspection station near Chihuahua City, to review intrastate movements.
7. Visit to Chihuahua airport and discussion with airport personnel regarding regulations.
8. Wrap up sessions at the SAGAR offices in Chihuahua City, Chihuahua.

The principal interest of Mexico appears to be for the United States to assign appropriate risk status for both HC and END which will recognize the zoonitary situation in these States. Mexican officials would especially like the United States to allow fresh and processed pork and poultry from Sinaloa and processed pork and poultry and fresh turkey from Chihuahua to compete for markets in the United States and Canada.

Background on HC Requests for Sinaloa and Chihuahua

In June 1994, Mexico formally requested that the United States recognize the States of Sinaloa and Chihuahua free of classical swine fever or HC as it is referred to in this document. These requests were made via documents known as "Characterization of the State of Sinaloa for International Recognition as a Classical Swine Fever Free Zone" and "Characterization of the State of Chihuahua for International Recognition as a Classical Swine Fever Free Zone," respectively. Additionally, Mexico has provided further documentation to address HC, specifically in a document referred to as "Classical Swine Fever-Free Zones in Mexico, Additional Information," dated August 1995. Finally, as a means of providing response to the questions referred to in Appendices 5 and 6 and in response to questions during the site visits, Mexico has provided additional information. A draft document "Actualización de la Información Adicional Requerida para Evaluar la Situación de Fiebre Porcina Clásica en los Estados de Sinaloa y Chihuahua," dated February 1997, was made available to the team in Mexico and was to be translated and finalized shortly.

In Sinaloa, the last HC outbreak was in April 1990 in the municipality of Concordia. Vaccination was prohibited in 1990, the eradication phase started in 1991, and the State was declared free of HC on November 16, 1993.

The last HC outbreak in Chihuahua was during 1989 in the municipality of Cuauhtemoc. The month was not given. Vaccination was prohibited in 1989, the eradication phase began in 1990, and the State was declared free of HC on September 27, 1993.

The HC Program in Mexico

On March 25, 1980, Mexico established the National Campaign for the Control and Eradication of Hog Cholera, now referred to in Mexico as classical swine fever. HC is a notifiable disease in

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Mexico. The regulatory aspects of the program are covered under animal health law and the National Hog Cholera Campaign norms (NOM-037-ZOO-1995).

When a State reaches free status, it must have in place a surveillance program, movement controls, diagnostic infrastructure, community education, certification of farms, statistical sampling, and an emergency response program. The specific requirements for a Mexican State to be declared free of HC are:

1. no HC cases in last 24 months;
2. procedures for eradication zones have been followed and applied;
3. prohibition of the use, distribution, and marketing of HC vaccines;
4. strict interstate movement control of swine and swine products and by-products; and
5. constant epizootiological surveillance through serological sampling at least every 12 months.

Until 1993, the national eradication program primarily involved vaccination and movement control. While considerable testing occurred during 1993, surveillance and testing were more passive in the following years. Surveillance was conducted mostly on commercial farms. Follow-up samples came only from clinical investigations and cases that had been reported as suspect previously. During the last 2 years, efforts have been made to make the program more active, including scheduled surveillance in declared free zones. Several more States are participating in the campaign. States that move into the "eradication" phase of the campaign (that is, when vaccination ceases) must establish an emergency response team.

The strategy of the program in the control zones (outside the free and eradication zones) is focused on strict movement controls and complete vaccination coverage of commercial herds. Surveillance activities in control zones have relied primarily on reporting suspicious cases and on investigating such cases.

In Mexico, the success of the eradication programs in the various States has been aided by:

1. the implementation of strict movement controls by the Animal Health Division;
2. active and aggressive participation by the private sector; and
3. the presence of natural barriers.

In Sinaloa, the west part of the state is bordered by the Pacific Ocean and Sea of Cortes and to the east by the Sierra Madre mountains, allowing for only a limited number of access points to the state. In Chihuahua, the west part of the state is bordered by the Sierra Madre mountains, to the south is a region of mountains and valleys, to the east is desert, and to the north lies the United States.

Animal Health Infrastructure

At the Federal level, animal health functions of the Secretariat of Agriculture, Livestock and Rural Development (SAGAR), are organized into a "normative" or policy setting function, and an "operational" function. Policies and norms are made by SAGAR's Plant, Animal and Quarantine Subcommittee offices in Mexico City.

At the State level, animal health norms are implemented by the Federal "delegate," the "subdelegate" for livestock, and SAGAR'S General Division of Animal Health (DGSA) offices. These latter offices respond through an operations link to the Federal Secretariat, not to the animal health division. Although effective communication exists, federal animal health officials at the central level have no direct authority at the local level over Federal or State animal health authorities. The success of any given program depends, to a large extent, on the existing relationships between the central offices and the federal delegate and subdelegate officers appointed to each State, as well as between government officers (any level) and the local livestock industry associations.

DGSA coordinates participation by various authorities in the epizootiological studies required for declaration of a HC-free zone. The DGSA also works with authorities responsible for establishments that slaughter swine or process swine products and by-products. DGSA monitors compliance with sanitary and documentary requirements for movement, distribution, and slaughter of swine throughout Mexico. This also holds true for poultry and poultry products.

Through accreditation, private veterinarians and others may participate in animal disease control functions. There are nine Federal accreditation program areas. Norms are covered under NOM-018-ZOO-1994. The SAGAR Animal Health Subdelegate or equivalent and SAGAR staff veterinarians are charged with the veterinary accreditation programs in each State, while the State government officials cooperate actively. Accreditation for specific program activities is renewed every 2 years and requires formal continual learning and renewal testing. During their accreditation period, these veterinarians are authorized to carry out regulatory functions in that specific program and are compensated entirely through their private functions. Accreditation areas also cover appropriate personnel for plant health programs.

HC functions of accredited veterinarians are defined under the norms for the accreditation program and those for the HC program (cited above). These include assisting SAGAR and other governmental units in program activities, such as disease surveillance, disease notification, and where permitted, vaccination of swine according to prescribed regulations.

The Mexico-U.S. Exotic Animal Disease Commission (former name: Commission for the Prevention of Foot-and-Mouth Disease and other Exotic Diseases (CPA) independently operates emergency response and diagnosis for animal diseases exotic to specific Mexican States or to Mexico. There are eight regional emergency response networks (DINESA) in Mexico. The

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regional coordinators conduct or coordinate foreign animal disease investigations. They implement State-level response groups (GEESA) for emergencies. Members of the GEESAs may be governmental employees or private citizens. These individuals, who are not all veterinarians, are selected based on responsiveness and professionalism. Governmental employees that participate are required to respond at the command of the regional DINESA director. GEESA members all undergo emergency readiness training (AutoSIM series).

When emergencies are reported to the CPA director or to SAGAR's Animal Health Commission Director, these individuals are in contact immediately by telephone and facsimile with SAGAR's Delegate and Subdelegates responsible for animal health in the State. They also report directly to SAGAR Secretariat officials. SAGAR Animal Health Subdelegates or equivalents in turn communicate directly with the Federal and State officials for slaughterhouses, processing plants, and State committees.

Agricultural censuses are carried out by Federal (not SAGAR) personnel every 10 years. State Rural Development District (DDR) personnel corroborate annually the agricultural census information from the most recent agricultural census. Animal populations may change rapidly in some areas. Hardest to determine is the swine and poultry population in backyard sites. With the recent outbreak of avian influenza in central Mexico and concomitant biannual AI surveys, the validation of census data occurs twice yearly. The benefit has been that twofold: census numbers are more accurate and surveillance opportunities are improved dramatically.

Animal Health Infrastructure in Sinaloa

In Sinaloa, SAGAR's livestock subdelegation is divided into three divisions, Animal Health, Livestock Development, and Grazing Coefficient Determination Area (Appendix 8). The Livestock Subdelegation coordinates the activities of veterinary technical staffs in each of 6 DDRs in the State.

On the State government side, a livestock office (Ganaderia del Estado) is present under the Livestock and Fisheries Development Subsecretariat, which in turn is under the Livestock and Fisheries Development Secretariat. The same individual, Dr. Martin Rosales-Cecena, serving both as Federal Delegate for agriculture in Sinaloa and as State Director of the livestock office. The State government participates in the implementation, remodeling, adaptation, construction, and operation of animal health inspection stations/checkpoints in the state. Animal health is handled directly by the livestock director.

District DDR directors are under the State Agriculture Secretariat but are responsive to the SAGAR Delegate. In each district there are departments for pastures, promotion, and possibly animal health. District offices are responsible for carrying out the program operations. Examples are the collection of data and deciding operational aspects of programs.

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A State Livestock Promotion and Protection Committee (CFPP) deals with animal disease issues. The CFPP has representatives from the Federal and State governments and the livestock producer organizations. Three positions of authority (President, Secretary, and Treasurer) are from SAGAR, State, and the State's Union Ganadera. Different from most States that have State-wide CFPP's, the CFPP President in Sinaloa, Ing. Benjamin Lopez-Esquera, is from the Sinaloa Regional Livestock Producers' Union (UGRS) and not SAGAR. CFPP provides people and funding for program operations, along with SAGAR and State.

CFPP subcommittees reportedly exist in the 6 DDR districts. Under Sinaloa's CFPP there are HC district campaign subcommittees. These work together with swine producers' unions and the swine processing industry sector which in turn work together with SAGAR and the state government to strengthen the HC campaign. Their collaborative activities include public education about the campaign.

To avoid redundancy with the State system, municipal personnel now respond to the District DDRs. Decentralization has resulted in many federal functions also being passed to the State and district levels or to the CFPP committee level.

Animal Health Infrastructure in Chihuahua

As in Sinaloa, the SAGAR Livestock Subdelegation in Chihuahua is divided into Animal Health, Livestock Development and Grazing Coefficient Determination Area sections (Appendix 9). The Livestock Subdelegation also coordinates the activities of the veterinary technical staffs in 14 DDR districts. Top to bottom organizational hierarchy for the State government is the Rural Development General Direction, Agricultural Development Department, and Livestock Development Office. The Livestock Development Office is further divided into divisions for Brand Registration and Control, Animal Health, Livestock and Animal Sanitation (Quarantine division), Livestock Producer Services, and Livestock Promotion. Livestock inspectors at the checkpoints fall under the division of Livestock and Animal Sanitation. The State government participates in the implementation, remodeling, adaptation, construction, and operation of animal health inspection stations/checkpoints in the State.

In Chihuahua, there is no active State-wide CFPP; however, the team was informed that a State-side council does meet as necessary to address State, Federal, and industry concerns. There are reportedly Federal-State-industry committees for some disease control programs. This apparently does not include HC. Control and eradication activities have been conducted primarily by State and federal personnel, but with active support of the limited number of swine producers.

Funding for HC Eradication Activities

Funding for HC activities is from three sources. In 1996, SAGAR provided \$N24,000 and \$N12,000 specifically earmarked for HC activities in Sinaloa and Chihuahua, respectively.

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SAGAR and CPA also both provide personnel and operational expenses. The great majority of Federal HC funds (\$N4,527,970), however, are used in States still in the control or eradication phases.

The State governments have also reduced their specific expenditures subsequent to the eradication program and in 1996 only provided \$N12,000 specifically earmarked for HC in Chihuahua. Data for Sinaloa were not provided. In previous years, the States provided over \$N1,000,000 per year.

Industry in Sinaloa has provided direct support at the checkpoints, including personnel and other operational costs. In addition, all surveillance costs on commercial farms are borne by the producer.

Swine Industry in Chihuahua and Sinaloa

Sinaloa: Data for 1993 shows that Sinaloa had 461,937 hogs. Of these 233,133 are considered destined for immediate consumption and are considered backyard. State government data for 1996 estimate 409,925 hogs located on over 36,600 premises. There were 105,925 hogs on only 31 commercial farms and 304,000 on 36,741 backyard premises. Data from 1993 gave pork production as 13,988 tons. Swine account for 10 percent of the total gross value of livestock production in the state, which also represents 3.5 percent of the country's swine production.

Geographically, Sinaloa's swine industry is concentrated in the northern and central areas of the state, where production of grains and plant protein is also located. There are two local regional swine producers' associations in the state. These are based in Los Mochis and Culiacán and are member associations of the URGS. Backyard swine production occurs principally in the south and is almost exclusively for personal consumption.

In Sinaloa, the team visited a commercial swine farm, as well as several backyard premises. The team also visited a municipal slaughter plant that handled swine as well as ruminants.

Chihuahua: In 1993, the State of Chihuahua had a swine inventory of 460,219 hogs. Data for 1996 estimates over 44,400 premises. Of these there were 360 hogs on only 8 commercial farms and the remainder (approximately 460,000) on 44,418 backyard premises. Data from 1993 gave pork production as 9,914 tons. Swine represent 5.8 percent of the total gross value of livestock production in Chihuahua. Only two farms in the State are using advanced production techniques. One is located at the La Posta Livestock Development Center belonging to SAGAR. The other farm belongs to the University at Chihuahua's School of Animal Husbandry. The remaining swine production appears to be backyard sites, including several thousand Mennonite community family farms. Production from these units is predominately for personal consumption.

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In Chihuahua, site visits did not include direct observations of any commercial swine operations. As in Sinaloa, the team visited several backyard sites. The team also had occasion to visit the herd of a state agricultural school and a Mennonite community herd.

Biosecurity Practices of the Commercial Swine Industry

The team observed impressive biosecurity at a commercial swine farm in Sinaloa. This included policies of strict no-ownership and no-exposure for all employees, as well as fencing, separate quarantine for new animals, separate areas and personnel for feed mill and for handling swine and shower-in and change procedures. In both states as is typical in most areas of Mexico, there is a complete lack of biosecurity on backyard farms. None of these presented any obvious biosecurity measures that might limit the spread of contagious diseases into the herd. While production and animal husbandry on the Mennonite farm visited was considerably better, no obvious concern for biosecurity was evident.

Movement Controls-Intrastate, Interstate, and International

Movement control has traditionally been and continues to be one of Mexico's strongest elements in reducing the incidence of a given disease and subsequently keeping it out of a given area. A program for the control of movement of livestock, poultry, and their products is strictly enforced in both Sinaloa and Chihuahua. Appendices 10 and 11 demonstrate the checkpoints described below.

Regulations (NOM-037-ZOO-1995, National Hog Cholera Campaign norms) do not allow the movement of swine and pork products into States declared free of HC from areas under eradication nor areas under control.

Pork products produced in States of lower health status than a State considered free may be imported only if they meet time and temperature processing requirements, and if they originate from an approved TIF plant.

Official personnel at checkpoints ask drivers and passengers of commercial cargo vehicles, passenger buses, and private vehicles to declare any agricultural products. They then visually inspect vehicle cargo compartments for undeclared or smuggled restricted products, including drugs. Commercial vehicles which left the state carrying swine or pork products and are returning must be washed and cleaned prior to entry. These vehicles are disinfected using a formaldehyde spray at the interstate check-points.

Inspection personnel fog malathion on all trucks that enter the State and verify cleaning and disinfection of empty trucks handling certain livestock and all poultry. Shredders and incinerators are used to destroy confiscated prohibited agricultural products.

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Commercial vehicles with agricultural cargo must present inspectors with the proper health and transit documentation (state entry/exit permit, transit guides, health certificates, tick dipping certificate for ruminants as required) or entry into the state is denied. In addition, all agricultural products entering and leaving the State are manually logged into official records and subsequently entered electronically into databases in Culiacán or Chihuahua City. Due to the difficulty of inspecting some trucks, trucks may be sealed and inspected at destination where their cargo is unloaded. All inspection stations are tied by a network of radio communication which is centrally located in each State.

Sinaloa: Sinaloa borders Nayarit, a State in the control phase for HC, to the south; Durango which is considered under eradication, to the west; and the HC-free States, Chihuahua to the east, and Sonora to the north. Swine may enter Sinaloa from the United States and from Sonora, which is considered free of HC but not pseudorabies, from certified Pseudorabies free herds only. Essentially no swine enter from Chihuahua. These would also require a previous permit.

The State's Committee of Plant Health (CESAVESIN) is in charge of plant and animal health activities at all checkpoints. Any commercial shipment of livestock or poultry intended to be imported into Sinaloa must be accompanied by a state permit from the CFPP. Each request is reviewed by the CFPP and additional approval may be required by the three entities of the CFPP (SAGAR, State government, and livestock producers).

In addition to the ports and airports, there are three interstate control points in Sinaloa for animals and animal products. These should have dipping stations for ruminants and presumably equine. There are three other intrastate checkpoints and dipping stations that are manned and are brought into action as necessary for specific zoosanitary control functions.

In Sinaloa, the team observed that there were sanitary controls in place at the international airport in Mazatlan. The team visited two interstate inspection stations. We did not visit Carrizo on the border with the State of Sonora.

The La Concha checkpoint is located along the main route between the Sinaloa and Nayarit, which is not considered free of HC, END, nor the poultry salmonellas of interest. Four shifts of personnel, including inspectors, agronomists and veterinarians from SAGAR, State and CESAVESIN, rotate in 12-hour shifts. Teams of 8-10 personnel will alternate days and nights, with rest periods of at least 24 hours between shifts. All vehicles were searched for restricted products.

All policies described above appeared to be strictly enforced. There were truck-washing facilities, but trucks generally come in clean. All trucks are fumigated with malathion as a prevention for Medflies and Mexflies. Sinaloa is considered free of these fruit flies. Commercial produce is all fumigated with methyl bromide. No non-commercial produce is permitted. The team observed a shredder and the incinerator, both of which appeared to be in regular use.

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The State criminal police (Policia Judicial del Estado) is located on site, have the authority to intercede, and are actively involved in compliance activities.

The Concordia checkpoint is located in Sinaloa at Kilometer 44 on the road between the States of Sinaloa and Durango, about 100 kilometers from the border with Durango. This checkpoint covers Sinaloa's requirements only, and there is another such checkpoint on the other side of the mountain range. Concordia personnel do advise travelers of Durango's requirements.

Activities were much less than at La Concha, as traffic from Durango is infrequent. The inspectors advised us that the route is considered dangerous traveling, especially at night. There are 3 teams of inspectors, agronomists, and veterinarians from SAGAR, State and CESAVESIN. Shifts are 24 hours each. This station is not on an official regional barrier line and thus it services general interstate needs only. It has provided stronger support, when Durango was not yet free of avian diseases.

Swine and pork products are not permitted entry from Durango since the State is still under eradication. Durango is considered free of the avian salmonellas, END, and avian influenza (AI). There are no commercial swine or poultry farms east of the checkpoint in Sinaloa. Cattle go to slaughter only and are not dipped. Livestock trucks generally are from farms in the immediate vicinity and do not require inspection, cleaning, or disinfection. Birds may come in if properly covered by requirements.

The State criminal police are not located on site but are nearby in the community of Concordia. As was the case at La Concha, they are actively involved in compliance activities and have the authority to intercede.

Due to the loss of the corrals used previously, there were no facilities for inspection and dipping. However, a new site has been purchased and inspection and dipping facilities were to be constructed. The team felt that such improvements will enhance the ability of checkpoint station personnel to control the few livestock movements that do occur.

Sinaloa has two main maritime ports, Mazatlán and Topolobampo. The main commodity that is imported is grain arriving in freighters mostly from the United States. Both Customs and Agriculture examine the manifest of the vessel, make on-board inspections, and examine passenger baggage. Where the port has no facility to handle any garbage, garbage is prohibited from being discharged.

Most of the flights arriving at the airports in Mazatlan, Culiacán, and Los Mochis, Sinaloa, are domestic flights. Passenger baggage is examined. Because most domestic flights originate from areas not yet declared free of hog cholera, airplane menus may not contain any pork; however, they may contain cooked poultry.

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Data for confiscations and products allowed importation for 1993-1996 were provided and are available separately. Records of control activities show consistency of effort.

Chihuahua: Chihuahua borders Texas (United States) to the north; Durango, a state under eradication, to the south; and Sonora, Sinaloa, and Coahuila, all States considered to be free, to the west, southwest, and east, respectively. Swine may enter Chihuahua from the United States and from the States of Sonora (certified Pseudorabies free herds only), Sinaloa, and Coahuila. In addition, all hogs and poultry must come accompanied by permit to enter Chihuahua from the Chihuahua State Animal Health Director.

There are five interstate control points in Chihuahua for animals and animal products. As is the case for Sinaloa, these should include dipping stations for ruminants and presumably equine. There are also nine other intrastate checkpoints and dipping stations which are manned and may be brought into action as necessary for zoosanitary control functions. These stations are generally operated by the State government in coordination with SAGAR and the Chihuahua Livestock Union. There are also three quarantine stations on the border with Texas, as well as the two mentioned airports.

All stations are connected with a network of radio communication. Interstate inspection stations should all have chemical disinfectant to disinfect vehicles entering the State and should have incinerators to destroy confiscated prohibited agricultural products. There is an adequate staff of official Federal and State inspectors continuously at the movement control stations. The control access points and livestock check points all operate 24 hours a day; the border quarantine stations operate during regular business hours.

In Chihuahua, the team observed some of the interstate controls in place at the Chihuahua City airport. The team also visited the inspection station "El Fresno," which handles intrastate traffic into and out of Chihuahua City. Inspectors required evidence of legal transit, including records of approved dipping and disease testing, from the previous stations on the route, before the continued movement was allowed.

Chihuahua does not have any ocean ports. As is the case in Sinaloa, most of the flights arriving at the airports (Chihuahua City and Ciudad Juárez) are domestic flights and the same controls apply.

Laboratories and Diagnostic Capabilities for Hog Cholera

For logistical reasons, the site visits did not include a visit to the national laboratories. In the past, commercial producers have used laboratories approved following IICA protocol; however, essentially all testing for HC is now done by the Federal Government. The exotic diseases laboratory of the CPA is located at Palo Alto, Mexico City, and provides diagnostic functions for all conditions considered exotic to the State. SAGAR has CENASA, the Federal reference laboratory located in Tecamac, State of Mexico. The CENASA laboratory tests specimens from

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States in stages of eradication but not for disease-free certification, a function reserved for CPA. In addition, CENASA provides diagnosis for specimens referred to it from a variety of sources. Both CENASA and CPA use the same tests and testing schemes (Appendix 12).

Serological samples are tested in by immunoperoxidase. Any suspicious samples are retested using ELISA protocol. Any samples still suspicious are tested with serum neutralization for final serological results. Tissue (liver, spleen, kidney, and lymph node), as well as serum, samples from suspicious cases are submitted to CPA by the DINESA coordinator or assigned disease investigator. Immunofluorescence antibody and virus isolation tests are considered definitive.

Surveillance for HC

Mexico has recognized Sinaloa and Chihuahua as free of HC since November and September 1993, respectively. Annual surveillance is required under NOM-037-ZOO-1995, National Hog Cholera Campaign norms. The number of samples collected in 1993 was significant, due to state-wide surveillance schemes. In subsequent years, serological sampling was down to passive surveillance levels, typical of disease investigation testing only. There have been several positive samples on the immunoperoxidase test. All these were negative on additional serological and tissue testing. HC-positive cases were detected in 15 and 7 Mexican States respectively, for 1995 and 1996. These States are principally in the central Mexican States near the capital, which do not export towards the northern Mexican States.

On-farm surveillance has now replaced most slaughter sampling. Backyard pigs generally do not go to slaughter facilities, rather they are slaughtered at the home. Thus, slaughter sampling is not advocated.

Surveillance data for 1993-1997 are part of the reports received and are summarized in Appendix 13. At this time, these data are considered incomplete and inconclusive. While there is certainly no evidence of infection, the incomplete and confusing reporting is a concern for the team.

Sampling Frames for 1997

In 1997, Mexico implemented systematic on-farm surveillance in all free states. CPA and SAGAR are providing sampling frames for backyard herds as well as commercial herds. The methodology has been adjusted as was suggested by APHIS during 1996.

All commercial herds are required to be monitored on an annual basis. The norm given for 1997 is that 59 or 30 pigs, for Sinaloa and Chihuahua, respectively, are selected from each unit that is managed as separate and generally unrelated herds (Appendices 14 and 15). The reason for the higher number of pigs per unit for Sinaloa is that State officials preferred a more intensive survey.

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Generally, assuming a start-to-finish operation, 80 percent of the samples should be from sows, 10 percent from boars, and 10 percent from feeders over 4 months of age.

Backyard site testing guidelines are provided for selected municipalities. The designated sites are selected "randomly" by the assigned veterinarian. All pigs, up to five pigs per site, are sampled "randomly," as may be permitted by the family's representative. In the event that the representative is not agreeable, the veterinarian goes to the next convenient site, usually a neighbor. For convenience and efficiency, backyard poultry are sampled at the same time and from the same sites. All birds, up to 10 birds per site, are sampled randomly, as can be caught. Testing is for AI, ND, and avian salmonellas. In the event that the veterinary officials and family members present are not successful in catching the birds, the family member is instructed to catch the bird at night and the official will return. DINESA and State officials did not report any problems with this approach.

CPA could not provide written guidelines for determining the random selection of pigs in commercial units nor for random selection of backyard herds to be included. The official is told how to make a "random" selection. APHIS suggests a checklist approach for the supervisors to use in assigning surveillance monitoring.

Sinaloa (Appendix 14)

There are commercial farms in 9 of the 18 municipalities. All are required by CPA to be tested every year. A total of 59 samples per herd is the norm established for 1997. Through February 22, 5 commercial herds in northern Sinaloa had been tested, reportedly all were negative. The plan for backyard premises was to sample 298 sites, for an expected total of 1,490 backyard pigs tested serologically. The team was told that accredited veterinarians do occasionally accompany governmental veterinarians.

At the time of the review, surveillance sampling was in progress. A diskette containing the records of all samples taken was presented to the team. These data will be analyzed as part of the recommended quantitative risk analysis.

Chihuahua (Appendix 15)

There are 8 commercial farms, distributed in 5 of the 14 districts. All are required by CPA to be tested every year. A total of 29 samples per herd is the norm established for Chihuahua. The plan for backyard premises is to sample 299 sites, testing all pigs up to 5 per site, for an expected total of 1,495 pigs tested serologically.

For 1997 through February 22, 2 commercial herds and 10 backyard sites had been tested. There were a total of 107 samples collected and tested. Fifty-eight were from the 2 commercial herds and the remainder were from backyard sites. The range in number of samples collected per

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backyard site was 2 to 13. These sites were from 5 (Chihuahua, Nuevo Casas Grandes, Cuauhtemoc, V. Ahumada, and Juarez) municipalities. Reportedly all samples were negative.

Processing Plant Facilities in Chihuahua

Following the April 1995 report regarding the "Carnes Selecta Baeza Farez," in Chihuahua City, this plant has now been allowed to transit fresh and frozen pork to markets in Japan and other countries. At the plant the team corroborated documents and the processing practices, including exclusive origin of pork from Sonora and the United States, with those permitted under current regulations. We found no problems and recommend that this plant continue to be allowed to transit pork and pork products through the United States.

Conclusions and Recommendations Related to HC:

A summary of data specific for each State is enclosed as Appendix 13.

The team recognized the meritorious efforts by the State and Federal governments and industry people involved in the swine industry to further animal health in Sinaloa and in Chihuahua. We make the following conclusions:

1. Cooperation between the Federal and State governments with industry is excellent. In both States, though different, the relationships result in functional support to animal health.
2. The combined veterinary infrastructure for both States is highly efficient and reliable and is capable of responding to an emergency should one be detected.
3. The emergency response for diagnosis and eradication is quite good.
4. There is no evidence that HC exists in either Sinaloa or Chihuahua since 1989 and 1990 respectively.
5. Surveillance and monitoring efforts in both States need to be continued and proven.
6. Laboratory capabilities in Sinaloa and Chihuahua are non-existent and testing is conducted in the National laboratories.
7. A final determination of risk class for HC should hinge on quantitative risk analysis.
8. The processing plant "Carnes Selecta Baeza Farez" appears to be complying with the norms established for the transit of pork products through the United States.

Our qualitative view is that Sinaloa and Chihuahua should both receive risk classes that reflect an evidently low prevalence of and risk for HC, an efficient veterinary infrastructure, and a surveillance and monitoring/surveillance system that has not been adequate and needs to be proven. This problem with the monitoring/surveillance systems will presumably increase the overall risk levels assigned. An overall qualitative risk level of moderate risk for HC is recommended for both States.

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Mexico should demonstrate continual monitoring for 1997 and subsequent years. For 1997, specific data regarding the sampling scheme, the herds sampled and tested, the laboratories used, and the laboratory testing conducted, will be necessary for quantitative risk assessment (QRA). QRA will ultimately allow determination of the risk level that should be assigned.

Special emphasis on backyard herds will be important, because of the uncontrolled nature of this part of the National herd and the difficulty in extrapolating information about commercial hogs to this population. The team believes that CPA and the other Federal and State officials we met will adjust the monitoring appropriately.

The United States may wish to approach the importation of swine and swine products from Mexican regions based on specific commodity-risk decisions.

Preliminary Review of Newcastle Disease Status in Chihuahua

Background

This review of the Newcastle Disease Status (END) in Chihuahua was in anticipation of a request by Mexico for disease-free recognition in the near future. Mexico officially declared Chihuahua free of END on June 19, 1995. In 1994, END and avian salmonellosis (pullorum and fowl typhoid) were eradicated in Chihuahua, as confirmed by sampling of all commercial flocks in the State.

The END Program in Mexico

Until 1992, Mexico's END eradication program was primarily focused on movement control. Surveillance and testing have been passive and any samples that were submitted have come only from cases that were reported as suspect. A more active approach was adopted in 1992 when certain poultry producers enrolled their flocks in a national Newcastle disease certification program. To certify a flock as END-free, 20-30 tissue samples have to be submitted for virus isolation. During the last 3 years, efforts to make the program more active are evident by enlisting more States to participate in the campaign and by initiating active surveillance in their declared free zones. States that move into the "eradication" phase of the campaign (no cases of END for at least 12 months) must establish an emergency response team. Progress with the END eradication was accelerated in certain Mexican States when avian influenza (AI) broke out in 1994 and 1995. Efforts to control AI helped reduce the incidence of END. Currently Mexico recognizes the States of Sinaloa, Sonora, Baja California, Baja California Sur, Chihuahua, Durango, and Yucatán as free of END.

Mexico's surveillance activities for AI have uncovered cases of Newcastle disease. All reported isolates were made at the CPA exotic animal disease laboratory. For calendar year 1996, Mexico reported 38 virus isolates of Newcastle disease. Of these, 36 were characterized as lento genic

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strains and 2 were characterized as velogenic. Although the total number of virus isolation attempts made is not clear, it appears that for 1996, about 3,800 attempts were made.

Historically and as recently as the early 1990's, END had been reported in the States of Queretaro, Tlaxcala, Puebla, Guanajuato, and Morelos. All these states are located in central Mexico.

The National Program for Newcastle disease contains the following:

1. certification of flocks and farms;
2. accreditation of veterinarians for Newcastle Disease; and
3. establishment of control, eradication, and free phases with set requirements for compliance with each stage of the program.

Newcastle Disease is a notifiable disease in Mexico.

Structure of the Poultry Industry in Chihuahua:

The main interest of the poultry industry in Chihuahua at this time appears to be the export of turkey and of processed poultry products.

There are approximately 546,387 birds at 58,231 backyard farms; and 2,057,706 birds at 1,066 commercial farms. The largest commercial farm has 850,000 birds; the smallest (excepting one commercial ostrich farm with 6 birds) has 700 birds.

Biosecurity Practices of the Commercial Poultry Industry

At the fully integrated commercial turkey operation we visited, there were strict biosecurity measures. All vehicles entering the complex drove through "car dip" automatic disinfectant sprayers directed at the tires and bottom of the car. Only regular workers were allowed into the buildings where the young poults (to 5 weeks of age) were housed. The review team was requested to remain in the vehicles and was not permitted entry into these buildings. The group was able to view the older turkeys in their outside enclosures. This facility did not have a shower-in/shower-out policy; however, access to the complex was tightly controlled with fencing and a guard station. In addition, there was a second line of fencing around the bird enclosures. It should be mentioned that there was no control of wild/migratory birds in the area. The older birds were housed outside with minimal shelter. The firm had apparently tried enclosure systems, but had trouble with respiratory disease and diarrhea. They found they have better success moving the birds to the outside enclosures at 5 weeks of age.

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Surveillance for Newcastle's Disease in Chihuahua

Epidemiological surveillance is set up as follows. Farms are sampled according to the following:

1. breeding: 10-20 birds per flock, sampled at 3, 12, and 26 weeks;
2. layers: 5 birds per 10,000 on the farm;
3. broilers: 3-5 birds per house, sampled at 3 weeks of age or older; sampled once;
4. environment: bedding, feed, and water; sampled once a year; and
5. backyard: average number of birds is 3-10.

For commercial farms, 29 samples are taken. One hundred percent of commercial farms in Chihuahua have been tested. For backyard flocks, up to 5 birds were sampled per premises. For surveillance data, see appendices 14 and 15.

At the farm we visited, Newcastle disease vaccine, based on strain B1 modified live virus, was used at 3 weeks. Lasota strain modified live virus vaccine was used at 7 weeks. Breeders also received a killed Newcastle disease vaccine at 28 weeks.

Laboratories and Diagnostic Capabilities for Newcastle Disease in Chihuahua

Information was provided by Mexico's two national reference laboratories (CENASA and CPA). There are also 26 other laboratories approved for the diagnosis of ND distributed throughout the country. The farm we visited, Parson's turkey, was using an approved laboratory in Torreon, Coahuila, for their diagnostics. Suspect positives are to be confirmed at CENASA or CPA.

Conclusions and Recommendations Related to END

The team was impressed with the commercial turkey and processing plant ventures visited in Chihuahua. While a request for status with respect to END freedom in Chihuahua has not yet been received, APHIS may anticipate one shortly. Interest in transiting poultry and poultry products through the United States has already been expressed. The owner of the turkey venture is requesting access to the United States and Canadian markets. Also, the processing plant visited would like to process pork from Sonora and U.S.- and Canadian-origin pork for reexport to the United States. They also process poultry products and APHIS may anticipate a similar request for these products.

Mexico should present specific data for recent years regarding the surveillance and testing for END in the State of Chihuahua and present evidence for continual monitoring. These data submitted should include the sampling scheme, the flocks sampled and tested, the laboratories used, and the laboratory testing conducted. Special emphasis on backyard flocks will be important, because of the outdoor rearing evident in the turkey enterprise visited.

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These data will allow the use of quantitative risk analysis to determine for areas recognized by Mexico as free of disease, the reliability of the surveillance systems in place, the quality of the data and ultimately the risk for disease importation and establishment. The United States should then approach the importation of poultry and poultry products from Mexican regions based on specific commodity-risk decisions.

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Appendix 1

Abbreviations and explanation of Mexican Governmental Organizations

CEBETA, Centro Bacchillerato Tecnológico Agropecuario: High school level Agricultural Technical School in Chihuahua

CENASA, Centro Nacional de Servicios de Diagnóstico en Salud Animal: National Center of Animal Health Diagnostic Services, Santa Ana, Tecamac, Mexico

CESAVESIN: Comité Estatal de Sanidad Vegetal del Estado de Sinaloa

Sinaloa: Sinaloa Committee for phytosanitary control, made up of SAGAR, State, and UGRS

CFPP, Comité de Fomento y Protección Pecuaria: Committee for the Promotion and Protection of Livestock

CPA, Comisión México-Estados Unidos para la Prevención de la Fiebre Aftosa y Otras Enfermedades Exóticas de los Animales: Mexico-U.S. Commission for the Prevention of Foot-and-Mouth Disease and other Exotic Diseases, also abbreviated EADC for Exotic Animal Diseases Commission). CPA has its own emergency disease laboratory, located in Mexico City, Mexico

DGDR, Dirección General de Desarrollo Rural: State Agriculture Directorate for Rural Development

DDR, Distrito de Desarrollo Rural: State Rural Development Districts

DGSA, Dirección General de Sanidad Animal: General State Directorate for Animal Health

DINESA, Dispositivo Nacional de Emergencia de Sanidad Animal: National Animal Health Emergency System. Under CPA

GEESA, Grupo Estatal: CPA, SAGAR, State and industry's State Animal Health Emergency Groups. GEESA coordination is by a Regional CPA Coordinator.

IICA, Instituto Interamericano para Cooperación en Agricultura: Interamerican Institute for Cooperation in Agriculture, headquarters located in San Jose, Costa Rica

MVZ, Médico Veterinario Zootecnista: Zootechnical Veterinary Doctor

NOM, Norma Oficial Mexicana: Official Mexican Standard, Federal regulations

NOM-003-ZOO-1994: Criteria for the Operation of Animal Health Accredited Laboratories

NOM-018-ZOO-1994: Verification unit/accreditation norms

NOM-037-ZOO-1995: National Hog Cholera Campaign norms, supercedes NOM-EM-012-ZOO-1994

PRONABIVE, Producción Nacional de Biológicos Veterinarios: National Veterinary Biologics Production

SAGAR, Secretaría de Agricultura, Ganadería y Desarrollo Rural: Secretariat of Agriculture, Livestock and Rural Development, Federal (formerly SARH)

TIF, Tipo Inspección Federal: Federal Inspection Type, Federally (SAGAR) inspected processing or slaughter plant

UGRS, Unión Gandra Regional de Sinaloa: Regional Livestock Union of Sinaloa

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Appendix 2

Site visits in Sinaloa and Chihuahua for the purpose of assessing the hog cholera program

Tuesday, February 18

Travel

Evening briefing meeting with Industry and Governmental Officials

Wednesday, February 19

Travel to and review activities at border check stop: "La Concha"

Visit two municipal slaughterhouses (swine and poultry) in Escuinapa.

Travel to Mazatlan

Travel to and review activities at border check stop: "Concordia"

Return to Mazatlan

Thursday, February 20

Travel to Culiacán

Visit separately (2 groups)

Bachoco poultry enterprise, Culiacán

"Carnes Santa Cecilia" swine enterprise, Culiacán

Meetings at "Union Ganadera Regional de Sinaloa" with CFPP, State governmental officials, CPA, SAGAR, and swine and avian producers

Meet with CPA and SAGAR officials, to review information on sampling and surveillance

Friday, February 21

Visit separately (2 groups)

Municipal slaughterhouse (emphasis swine and ruminants), Culiacán

Federally inspected "124 Bachoco" poultry plant, Culiacán

Meet with CPA and SAGAR officials, to review information on sampling and surveillance.

Meet with Governor of Sinaloa, Ing. Renato Vega-Alvarado

Saturday, February 22 (One group went to Sonora)

Travel to Chihuahua City

Visit TIF swine processing plant, Chihuahua City

Meeting with swine and avian producers, and State, CFPP, CPA and SAGAR officials

Sunday, February 23

Visit backyard flock enterprise, Santa Eulalia, Chihuahua

Monday, February 24

Travel to Cuauhtemoc City

Visit Agricultural/Technical School "CEBETA" swine farm

Visit Menonite community swine and poultry farm

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Visit intermunicipal checkpoint "El Fresno, Chihuahua City
Return to Chihuahua City
Meet with CPA, SAGAR and State personnel to review information on sampling and surveillance

Tuesday, February 25

Travel to Nuevo Casas Grandes, Chihuahua
Visit Parson turkey farm
Visit Parson slaughterhouse for turkeys
Return to Chihuahua City
Meet with CPA, SAGAR and State personnel to review information on sampling and surveillance

Wednesday, February 26

Return travel

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Appendix 3

In Sinaloa, the team was accompanied by the following Mexican officials:

Dr. Cesar Villarreal Chavez, Director, Comisión México Estados Unidos para la Prevención de la Fiebre Aftosa y Otras Enfermedades Exóticas de los Animales (CPA), Mexico City

Dr. Elisa Rubí Chavez, Unidad de Evaluación de Riesgo, CPA, Mexico City

Dr. Assad Heneidi, Unidad de Evaluación de Riesgo y Epidemiología, CPA, Mexico City

Dr. Victor Lezame G., Coordinador Regional, CPA, DINESA, Sonora

Dr. Salvador Solís, Campañas Zootaxiarias, Dirección General de Salud Animal, Mexico City

Dr. Jesús Salinas, Salud Animal, Subdelegación de Ganadería y Desarrollo Rural, Sinaloa

Dr. Jorge Luis Armenta Soto, Secretaria de Desarrollo Agropecuario, Sinaloa

Dr. Martin Javier Rosales Cecena, Director, Ganaderia del Estado, and Federal Delegate, SAGAR

Ing. Rudolfo Rendon-Hernán, Subdelegado de Agropecuaria, SAGAR, Sinaloa

Ing. Fortunato Félix Barraza, Comité Estatal de Sanidad Vegetal del Estado de Sinaloa, Sinaloa

Meetings with industry representatives

Ing. Benjamín J. López Esquera, Unión Ganadera Regional de Sinaloa, Sinaloa

Lic. Jesús Ramón Angulo Salazar, Barobampa, poultry producer, Los Mochis, Sinaloa

Lic. Ernesto Ortegón Castro, Maryclara, Avícola Promesa, egg producer, Los Mochis, Sinaloa

Edgar Quintero Camargo, "La Concha" swine producer, Los Mochis, Sinaloa

Miguel Ángel Samper, poultry producer, Sinaloa

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Appendix 4

In Chihuahua the team was accompanied by the following Mexican officials:

Dr. Cesar Villarreal Chavez, Director, Comisión México Estados Unidos para la Prevención de la Fiebre Aftosa y Otras Enfermedades Exóticas de los Animales (CPA), Mexico City

Dr. Elisa Rubí Chavez, Unidad de Evaluación de Riesgo, CPA, Mexico City

Dr. Victor Lezame G., Coordinador Regional, CPA, DINESA, Sonora

Dr. Oscar Lorenzana P., Coordinador Regional, CPA, DINESA, Durango

Dr. Salvador Solís, Campañas Zoonosológicas, Dirección General de Salud Animal, Mexico City

Dr. Cesar O. Borunda Almeda, SAGAR, BAFAR, TIF processing plant, and President, Association of Veterinarians, Chihuahua

Ing. Octavio Legarreta Guerrero, SAGAR Delegado, Chihuahua

Juan Manuel Aguirre-Ortega, SAGAR Sub Delegado, Agropecuario, Chihuahua

Dr. Blas B. Ibarra, SAGAR, TIF Processing Plants Division, Chihuahua

Dr. Anatasio Herrera-Zavala, SAGAR, Animal Health, Chihuahua

Dr. Rosendo Benitez-Sanchez, SAGAR, Chihuahua

Carlos A. Garcia-Escoto, DGDR, Animal Health, Chihuahua

Dr. Luis Carlos Fierro, DGDR, Livestock Programs, Animal Health and Brand Inspection, Chihuahua

Meetings with Industry representatives

Eugenio Baeza, Carnes Selecta Baeza Farez, Chihuahua

Ing. Raul Fernandez Urquidi, Freskesito, broilers and beef, Chihuahua

Jose G. Munoz-Alcocer, swine producer, Chihuahua

Luis Gardea-Duarte, Chihuahua

J. Ricardo Parson M., Empresas Parson, turkey producer, Chihuahua

Ing. Enrique Blanco, RIMA, meat processing, Chihuahua

Appendix 5

Additional Information Needed to Assess the Status of Hog Cholera (HC, Classical Swine Fever) in the State of Sinaloa, Mexico:

1. FINANCIAL RESOURCES

- a. What is the Federal budget allocated to the hog cholera control program (HCCP) in the State of Sinaloa?
- b. What is Sinaloa's State budget allocated to the HCCP?
- c. What is Sinaloa State swine industry's contribution to the HCCP?

2. ACCREDITED VETERINARIANS AND OTHER AUTHORIZED PERSONNEL

- a. Please describe the animal health infrastructure and its relation to the Federal Government, the Livestock Subdelegation of the Ministry of Agriculture, and Livestock Production and Rural Development (SAGAR).
- b. Please indicate in an organizational chart exactly where are the HCCP accredited veterinarians. How many are they? Are veterinarians State or Federally accredited veterinarians for the HCCP?

3. SWINE IDENTIFICATION

Please describe the Swine Identification Program. Are these programs under State committees?

4. LABORATORY

- a. What laboratories in the State of Sinaloa receive suspect specimens? Where are these located? Are other laboratories authorized to receive such samples?
- b. Are there any serological records which indicate any instances of cross reactivity of serological samples with bovine viral diarrhea?
- c. What is the capability of approved laboratories in Sinaloa to perform virology work?
- d. How are samples from sick pigs handled? Are all tested for hog cholera? Please describe.

5. CENSUS/SURVEYS/PLANNED SAMPLING

- a. What are the plans to conduct yearly survey(s) of the swine population? Additional information concerning the distribution of the sampling and the design of the survey submitted for review of the State of Sinaloa is desired.
- b. What is the current swine population of the Sinaloa? For the backyard swine production census, what is the count of backyard premises by district? Please provide your latest updated census.

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The information they should be able to provide should be similar to that obtained during the Yucatan site visit:

1. Latest detailed information from census of commercial operations and backyard farms. Ideally, we would like for each premises (whether backyard or commercial):

- a. District
- b. Municipality
- c. Number of buildings/separate locations
For each building/separate location:
 1. Number of animals - breeding stock
 2. Number of non-breeding hogs (fattening/slaughter)

2. For each survey conducted and/or planned of slaughter plants, ideally, we would like for each premises:

- a. District
- b. Municipality
For each month of sample:
 1. Number of animals sampled and results - breeding stock
 2. Number of animals sampled and results - non-breeding hogs

Please describe the protocol for how you chose the sample size, and how you selected the animals to sample, and your rationale for the design of this protocol.

6. SURVEILLANCE

- a. What forms of surveillance are in place to ensure that hog cholera is not introduced into the State of Sinaloa since it is bordered by States which are not recognized by Mexico as being free of hog cholera?
- b. How many samples are submitted to the reference laboratories for routine ongoing surveillance? What type of samples are submitted (slaughter hogs, breeding animals at slaughter, cull hogs only, etc.)? What is the number of "sick" pigs that were determined not to have hog cholera? What action is taken with equivocal results?
- c. What is the structure of the ongoing, continual monitoring and surveillance for this swine disease? Are all slaughter swine serologically sampled at the abattoir? What plan does the pertinent livestock development and protection committee have in place to continually monitor for hog cholera?

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How is slaughter surveillance conducted? How is the number of samples determined? From how many slaughter plants are samples submitted from?

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Appendix 6

Additional Information Needed to Assess the Status of Hog Cholera (HC, Classical Swine Fever) in the State of Chihuahua, Mexico:

1. FINANCIAL RESOURCES

- a. What is the Federal budget allocated to the hog cholera control program (HCCP) in the State of Chihuahua?
- b. What is Chihuahua's State budget allocated to the HCCP?
- c. What is Chihuahua State swine industry's contribution to the HCCP?

2. ACCREDITED VETERINARIANS AND OTHER AUTHORIZED PERSONNEL

- a. Please describe the animal health infrastructure and its relation to the Federal Government, the Livestock Subdelegation of the Ministry of Agriculture, and Livestock Production and Rural Development (SAGAR).
- b. Please indicate in an organizational chart exactly where are the HCCP accredited veterinarians. How many are they? Are veterinarians State or Federally accredited veterinarians for the HCCP?

3. SWINE IDENTIFICATION

Please describe the Swine Identification Program. Are these programs under State committees?

4. LABORATORY

- a. What laboratories in the State of Chihuahua receive suspect specimens? Where are these located? Are other laboratories authorized to receive such samples?
- b. Are there any serological records which indicate any instances of cross reactivity of serological samples with bovine viral diarrhea?
- c. What is the capability of approved laboratories in Chihuahua to perform virology work?
- d. How are samples from sick pigs handled? Are all tested for hog cholera? Please describe.

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5. CENSUS/SURVEYS/PLANNED SAMPLING

- a. What are the plans to conduct yearly survey(s) of the swine population? Additional information concerning the distribution of the sampling and the design of the survey submitted for review of the State of Chihuahua is desired.
- b. What is the current swine population of the Chihuahua? For the backyard swine production census, what is the count of backyard premises by district? Please provide your latest updated census.

The information they should be able to provide should be similar to that obtained during the Yucatan site visit:

1. Latest detailed information from census of commercial operations and backyard farms. Ideally, we would like for each premises (whether backyard or commercial):

- a. District
- b. Municipality
- c. Number of buildings/separate locations
For each building/separate location:
 1. Number of animals - breeding stock
 2. Number of non-breeding hogs (fattening/slaughter)

2. For each survey conducted and/or planned of slaughter plants, ideally, we would like for each premises:

- a. District
- b. Municipality
For each month of sample:
 1. Number of animals sampled and results - breeding stock
 2. Number of animals sampled and results - non-breeding hogs

Please describe the protocol for how you chose the sample size and how you selected the animals to sample, and your rationale for the design of this protocol.

6. SURVEILLANCE

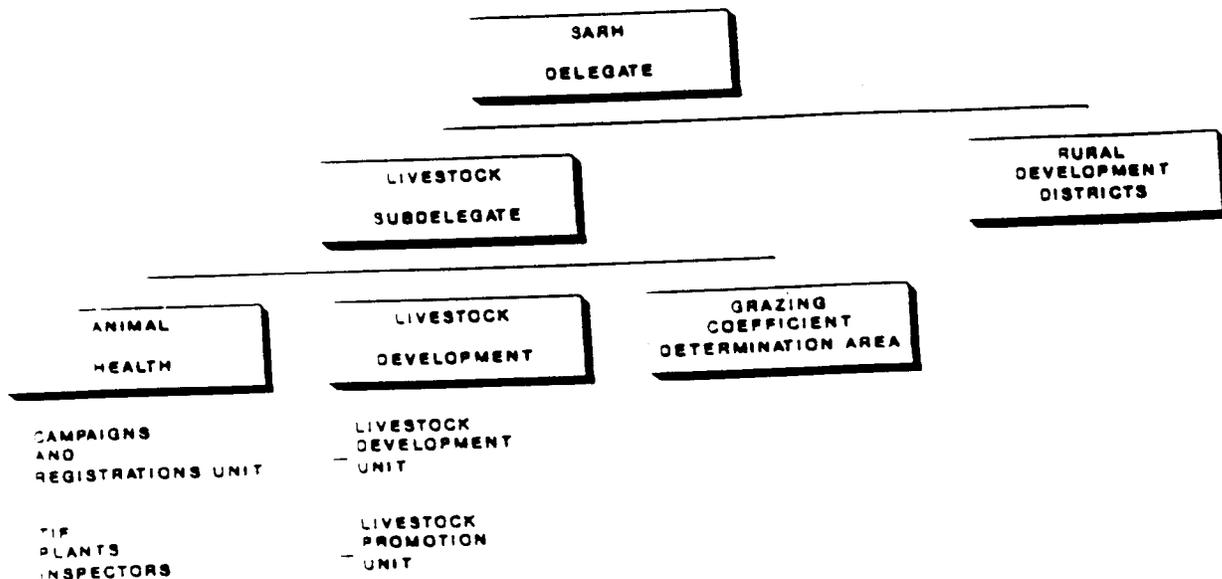
- a. What forms of surveillance are in place to ensure that hog cholera is not introduced into the State of Chihuahua since it is bordered by States which are not recognized by Mexico as being free of hog cholera?

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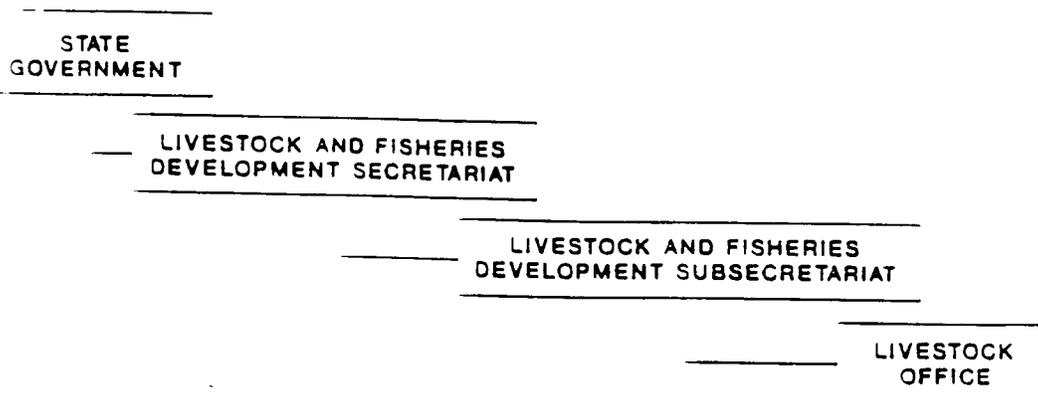
- b. How many samples are submitted to the reference laboratories for routine ongoing surveillance? What type of samples are submitted (slaughter hogs, breeding animals at slaughter, cull hogs only, etc.)? What is the number of "sick" pigs that were determined not to have hog cholera? What action is taken with equivocal results?

- c. What is the structure of the ongoing, continual monitoring and surveillance for this swine disease? Are all slaughter swine serologically sampled at the abattoir? What plan does the pertinent livestock development and protection committee have in place to continually monitor for hog cholera? How is slaughter surveillance conducted? How is the number of samples determined? From how many slaughter plants are samples submitted from?

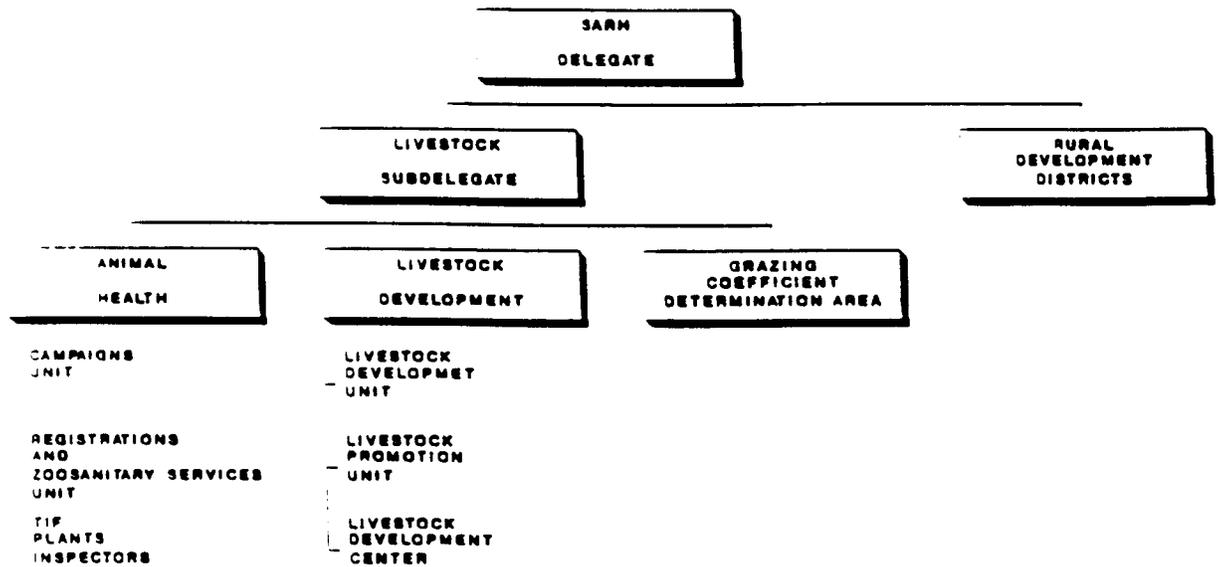
ANIMAL HEALTH FEDERAL STRUCTURE IN SINALOA



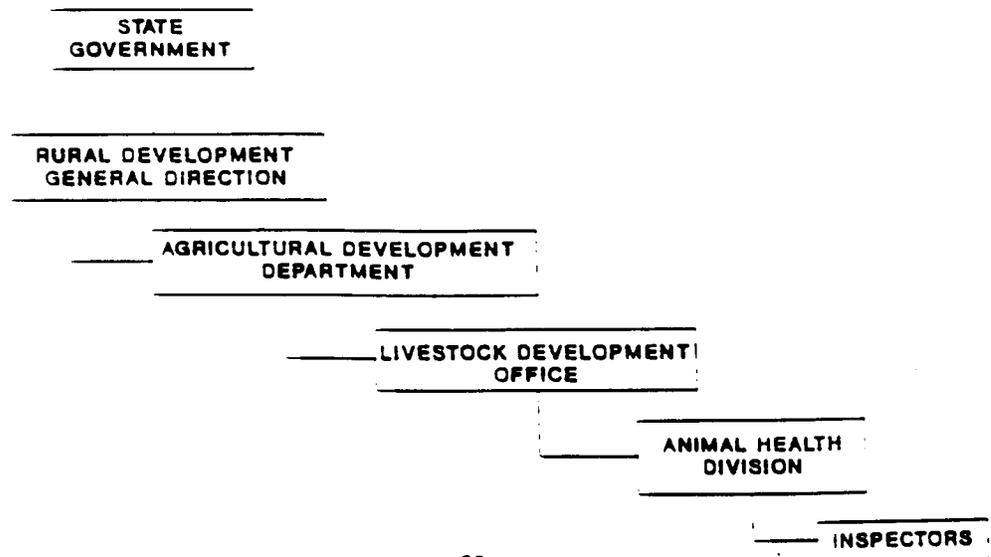
ORGANIZATION CHART FOR THE STATE GOVERNMENT



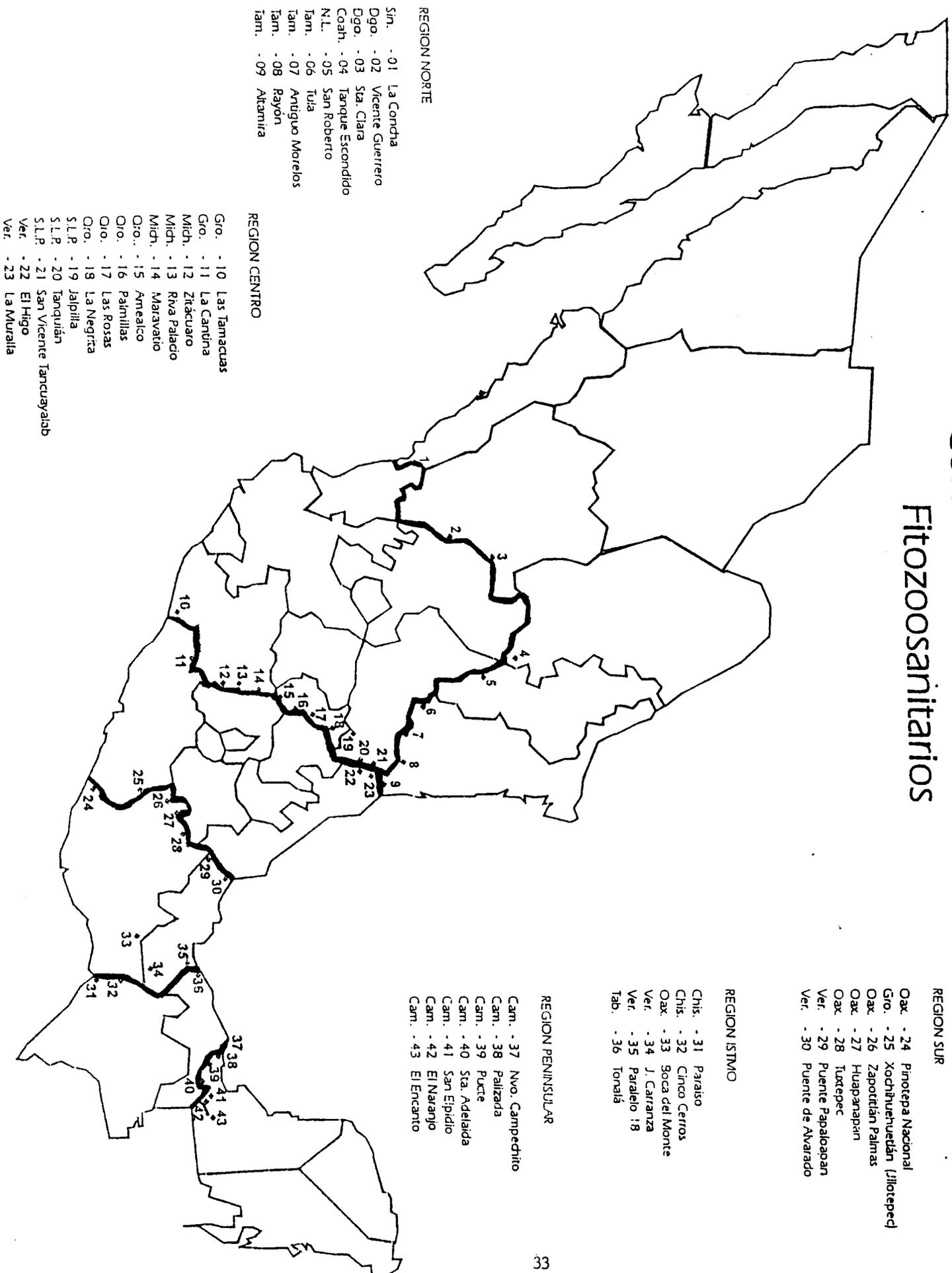
ANIMAL HEALTH FEDERAL STRUCTURE IN CHIHUAHUA



STATE GOVERNMENT CHART



Cordones Cuarentenarios Fitozoosanitarios



- REGION NORTE
- Sim. - 01 La Gorda
 - Dgo. - 02 Vicente Guerrero
 - Dgo. - 03 Sta. Clara
 - Coah. - 04 Tanque Escondido
 - N.L. - 05 San Roberto
 - Tam. - 06 Tula
 - Tam. - 07 Antigua Morelos
 - Tam. - 08 Rayón
 - Tam. - 09 Atlix

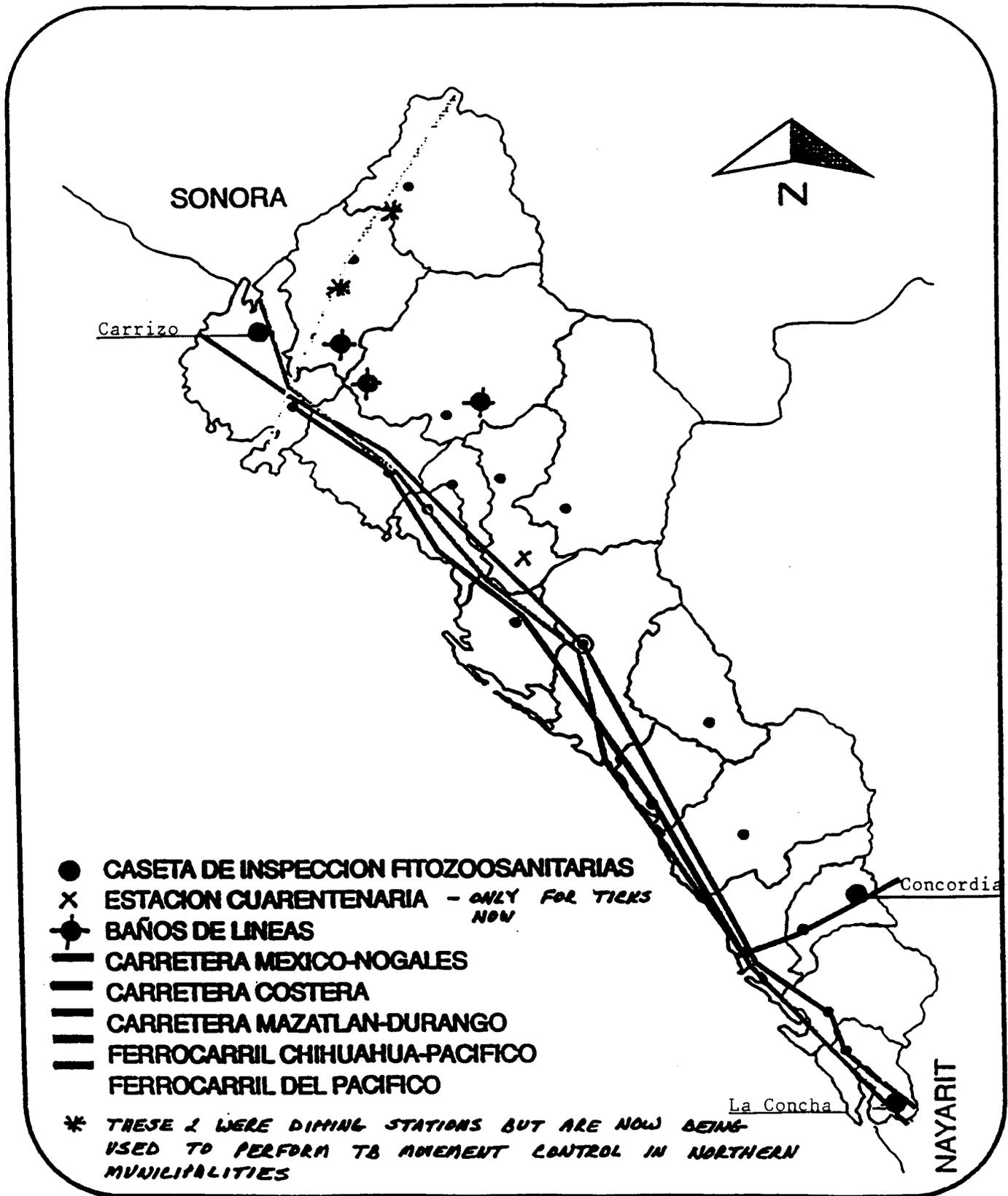
- REGION CENTRO
- Gro. - 10 Las Tlacuacas
 - Gro. - 11 La Cantina
 - Mich. - 12 Zitácuaro
 - Mich. - 13 Riva Palacio
 - Mich. - 14 Maravatio
 - Oro. - 15 Amatlac
 - Oro. - 16 Palmillas
 - Oro. - 17 Las Rosas
 - Oro. - 18 La Negraíta
 - S.L.P. - 19 Jalpilla
 - S.L.P. - 20 Tanquían
 - S.L.P. - 21 San Vicente Tancuayalab
 - Ver. - 22 El Higo
 - Ver. - 23 La Muralla

- REGION SUR
- Oax. - 24 Pinotepa Nacional
 - Gro. - 25 Xochihuehuacán (Jilotepec)
 - Oax. - 26 Zapotitlán Palmas
 - Oax. - 27 Huapanapam
 - Oax. - 28 Tuxtepec
 - Ver. - 29 Puente Papaloapan
 - Ver. - 30 Puente de Avarado

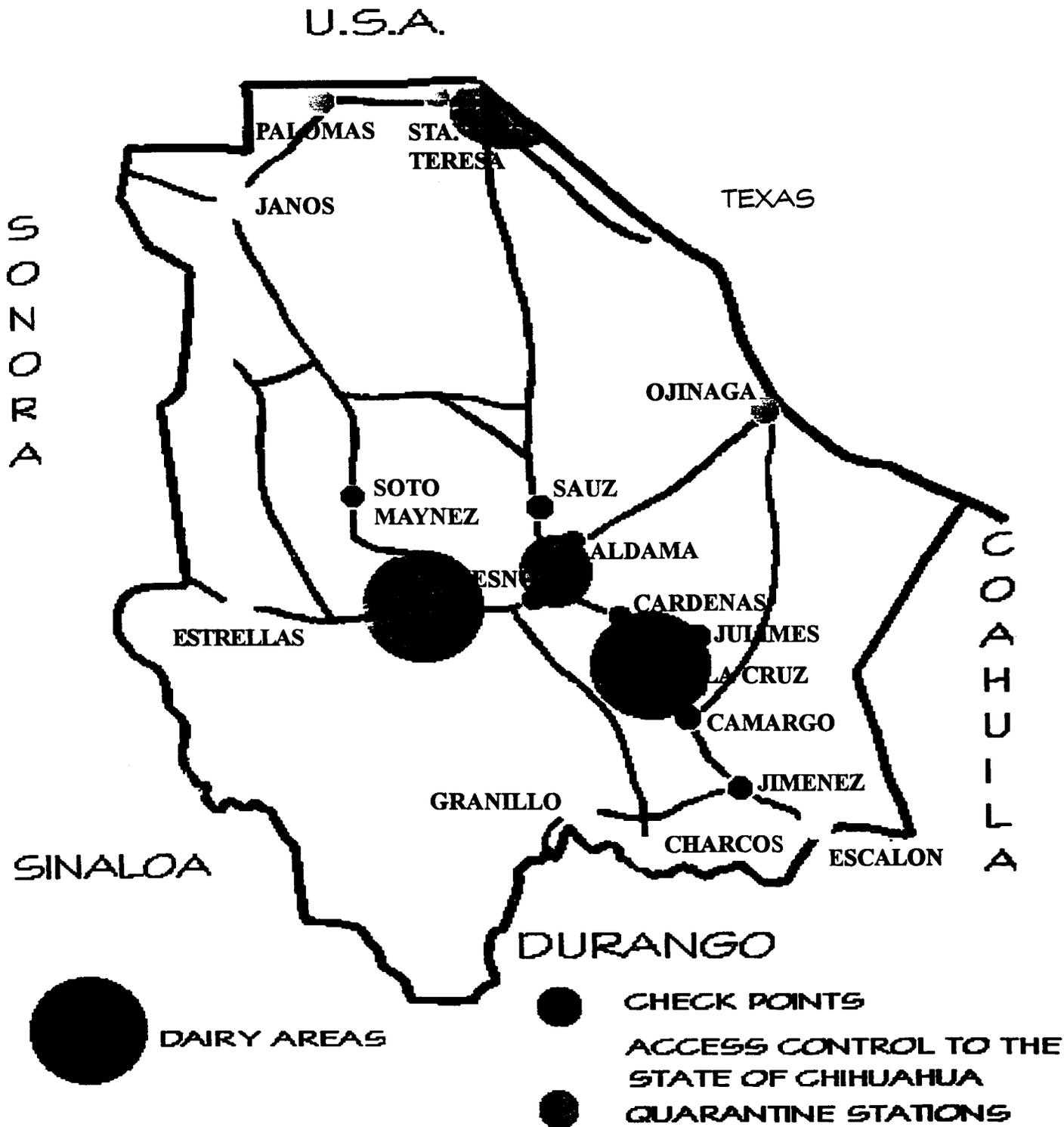
- REGION ISTMO
- Chis. - 31 Paraiso
 - Chis. - 32 Cinco Cerros
 - Oax. - 33 Gocca del Monte
 - Ver. - 34 J. Carranza
 - Ver. - 35 Paralelo 18
 - Tab. - 36 Tonala

- REGION PENINSULAR
- Cam. - 37 Nvo. Campechito
 - Cam. - 38 Palizada
 - Cam. - 39 Pucte
 - Cam. - 40 Sta. Adelaida
 - Cam. - 41 San Eipidio
 - Cam. - 42 El Naranjo
 - Cam. - 43 El Encanto

INFRAESTRUCTURA PARA EL CONTROL DE LA MOVILIZACION Y PRINCIPALES RUTAS PECUARIAS

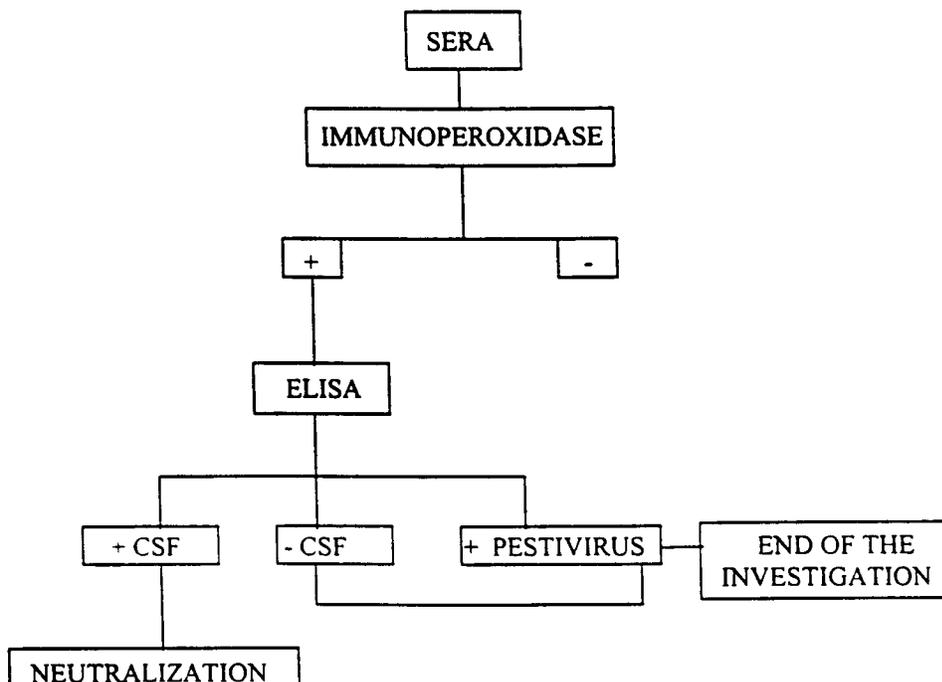


LIVESTOCK CHECK POINTS IN THE STATE OF CHIHUAHUA



**DIAGNOSTIC TECHNIQUES USED FOR SUSPECTED CASES AND
PERMANENT MONITORING IN CLASSICAL SWINE FEVER (CSF) FREE
ZONES
NATIONAL CENTER OF DIAGNOSTIC SERVICES IN ANIMAL HEALTH
(CENASA)**

When sera is submitted:



When whole blood is submitted:

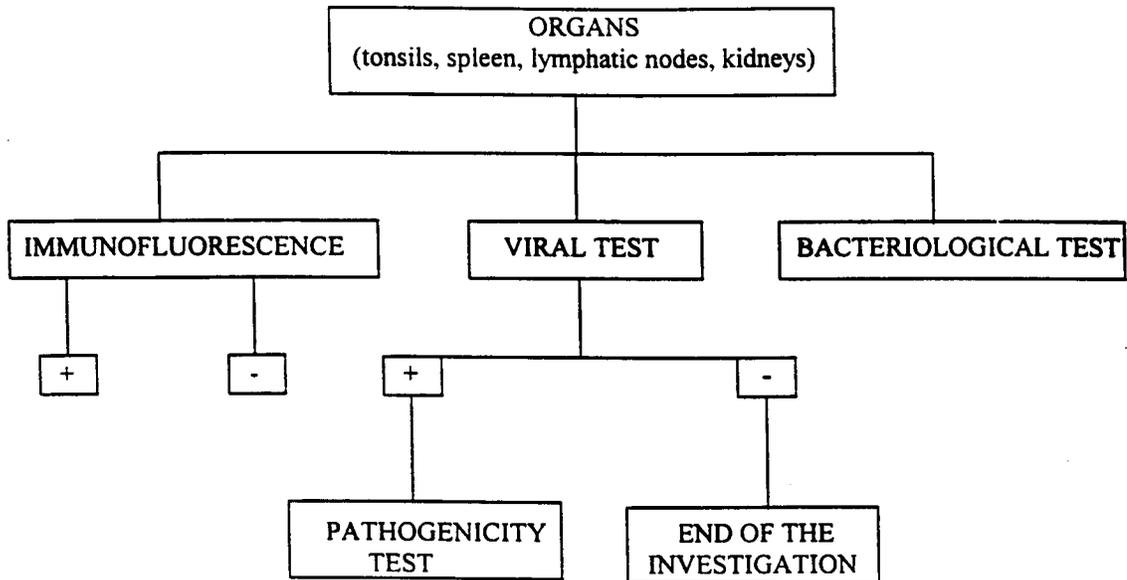


NOTE:

- The immunoperoxidase is the routine test for testing sera.
- If the serum samples is positive, then the ELISA test is performed to differentiate the classical swine fever and the pestivirus antibodies.
- If the serum sample is ELISA positive to CSF, the neutralization test will be performed to confirm the presence of the agent and in all cases, antibodies titration is done. In addition, an adequate investigation will be carried out and more samples will be required. If the test is ELISA negative and no clinical signs of CSF are evident during the epidemiological investigation, it is considered a cross reaction to pestivirus.

- If whole blood is submitted, the ELISA test is used for detection of the agent in leukocytes.

In the case of organs:



NOTE:

- In the case of organs, the direct immunofluorescence (IFT), viral and bacteriological tests are performed simultaneously. Bacteriology is tested for *Erisipelotrix*, *Pasteurella spp* y *Salmonella spp*.
- Whenever samples are originated from free zones, and are IFT positive, the sample is considered as positive. If the viral isolation is made, then a pathogenicity test is performed.

Find enclosed the protocols of the diagnostic techniques: immunoperoxidase (after the National Veterinary Services Laboratories of Ames, Iowa), direct immunofluorescence on cryostat sections of organs. ELISA and viral isolation in tissue cultures.

May 7, 1997

Appendix 13. Summary of Information provided through February 1997 on Hog Cholera in Sinaloa and Chihuahua, Mexico.

	Sinaloa	Chihuahua
Officially free since	1993	1993
Last outbreak, vaccination prohibited	1990	1989
Borders (North) (West) (South) (East)	Sonora and Chihuahua Durango Nayarit Gulf of California	Texas, U.S. Coahuila and Sonora Durango Sinaloa
Area	58,328m Km2	387,900 Km2
Swine population	409,925 hogs. Data for 1996 estimates 105,925 hogs on 31 commercial farms and 304,000 on 36,741 backyard premises	460,219 hogs. Data for 1996 estimates 44,400 premises. 360 hogs on 8 commercial farms and 460,000 on 44,418 backyard premises
DDR (Rural Development Districts)	8	14
HC diagnosis and response capability	Federal labs only, GEESA emergency response teams in place since 1994	Federal labs only, GEESA emergency response teams in place since 1994
Checkpoints and internal quarantine service	3, committee (State/Federal/industry) operations	6, State operation with participation by Federal and industry
Airports	3	2
Ports	3	None
Border crossing points	None	Juarez Palomas Ojinaja

May 7, 1997

Systematic surveys conducted	1993 (commercial on farm, backyard based on slaughterhouses), 1994 (31 commercial farms), 1995 (selected farms and municipalities, 779 samples), 1996 (Los Mochis, 36 samples), 1997 (on-farm) in progress	1993 (commercial on farm, backyard based on slaughterhouses), 1995 (selected municipalities, 877 samples), 1996 (100 samples, 2 municipalities), 1997 (on-farm) in progress
Financing	Federal, State, Industry	Federal, State, Industry
GEESA established	1994	1994